

UNIDAD 0: NOCIONES BÁSICAS

Cuestión 1:

Realizar las siguientes operaciones combinadas con números enteros, indicando todos los pasos:

a) $(-3 + 6 + 18) : (-3) =$ (Soluc: -7)

b) $(-4) - (-6) : (-3) =$ (Soluc: -6)

c) $5 : (-5) - (-7) \cdot 2 =$ (Soluc: 13)

d) $(-11) - 3 \cdot (-4) : (-6) - (-9) =$ (Soluc: -4)

e) $[2 - (-5) - 3] \cdot (-2) =$ (Soluc: -8)

f) $[6 - (-1) - (-13)] : (-5) =$ (Soluc: -4)

g) $[(-7 + 5 - 2) - (6 - 8) + 5] : (-3) =$ (Soluc: -1)

h) $[(-5) \cdot (-3) \cdot 4 + 12] : [-12 - (-3)] =$
(Soluc: -8)

i) $-4 + 6 \cdot (-2 + 5) : (-9) + 2 \cdot 3 =$
(Soluc: 0)

j) $-18 - [4 + (-6)] : 2 + 5 =$
(Soluc: -12)

k) $\{[-4 + 6 \cdot (-2 + 5)] : (-7) + 2\} \cdot 3 =$
(Soluc: 0)

l) $18 : [6 - 3 \cdot (-4 : 2 + 1)] - 3 =$
(Soluc: -1)

m) $(-5) - (-9) - 4 \cdot (-3) : (-2) : (-6) =$
(Soluc: 5)

n) $3 - 6 : 2 \cdot (-3) : [-2 + (-1)] =$
(Soluc: 0)

$$\text{o) } [(-4 + 6 : 3 + 1) \cdot (6 - 4 : 2) + 8] : (-2) =$$

(Soluc: -2)

$$\text{p) } 2 + 4 : 2 - 3 \cdot (-5) + 6 - 3 : (5 - 2 \cdot 3) =$$

(Soluc: 28)

$$\text{q) } (-2) \cdot [8 - 6 \cdot (-3 + 12 : 2) : (-3) + 1] + (-3) =$$

Cuestión 2:

Resolver las siguientes operaciones con fracciones en línea, **simplificando en todo momento** los pasos intermedios y el resultado:

$$1. \frac{5}{4} - \frac{2}{4} = \quad \quad \quad (\text{Soluc: } 3/4)$$

$$2. \frac{5}{5} - \frac{4}{4} = \quad \quad \quad (\text{Soluc: } 0)$$

$$3. \frac{5}{5} - \frac{16}{4} = \quad \quad \quad (\text{Soluc: } -3)$$

$$4. -\frac{2}{3} - 4 = \quad \quad \quad (\text{Soluc: } -14/3)$$

$$5. \left(32 + \frac{1}{2} - 4\right) - \left(16 - \frac{3}{2} - 2\right) = \quad \quad \quad (\text{Soluc: } 16)$$

$$6. \frac{1}{4} + \frac{1}{3} \cdot \frac{6}{5} = \quad \quad \quad (\text{Soluc: } 13/20)$$

$$7. \left(\frac{1}{4} + \frac{1}{3}\right) \cdot \frac{6}{5} = \quad \quad \quad (\text{Soluc: } 7/10)$$

$$8. 1 - \frac{2}{3} \cdot \frac{1}{5} = \quad \quad \quad (\text{Soluc: } 13/15)$$

$$9. \left(1 - \frac{2}{3}\right) \cdot \frac{1}{5} = \quad \quad \quad (\text{Soluc: } 1/15)$$

10. $-\frac{2}{3} + \frac{4}{3} \cdot \frac{1}{2} =$ (Soluc: 0)
11. $-2 - \frac{1}{3} =$ (Soluc: -7/3)
12. $\frac{17}{15} \cdot \frac{1}{5} + \frac{4}{3} =$ (Soluc: 39/25)
13. $\left(-1 + \frac{1}{2} - \frac{1}{3}\right) \cdot \frac{6}{5} =$ (Soluc: -1)
14. $-\frac{2}{5} + \frac{1}{3} \cdot \frac{4}{5} - \frac{1}{3} \cdot \frac{6}{5} =$ (Soluc: -8/15)
15. $\left(1 - \frac{1}{2} + \frac{1}{3}\right) \cdot \frac{2}{5} =$ (Soluc: 1/3)
16. $1 - \frac{1}{2} + \frac{1}{3} \cdot \frac{2}{5} =$ (Soluc: 19/30)
17. $\left(-\frac{2}{5} + \frac{1}{3}\right) \cdot \frac{4}{5} - \frac{1}{3} \cdot \frac{6}{5} =$ (Soluc: -34/75)
18. $\frac{1}{2} + \frac{1}{3} \cdot \frac{4}{3} - \frac{1}{12} + \frac{5}{4} \cdot \frac{8}{3} =$ (Soluc: 151/36)
19. $\left(\frac{1}{2} + \frac{1}{3}\right) \cdot \frac{4}{3} - \frac{1}{12} + \frac{5}{4} \cdot \frac{8}{3} =$ (Soluc: 157/36)
20. $-\frac{1}{2} \cdot \frac{4}{7} - \frac{2}{14} + \frac{1}{2} \cdot \frac{5}{7} =$ (Soluc: -1/14)
21. $-\frac{1}{2} \cdot \left(\frac{4}{7} - \frac{2}{14}\right) + \frac{1}{2} \cdot \frac{5}{7} =$ (Soluc: 1/7)
22. $\frac{21}{2} - \frac{19}{2} : \left(\frac{1}{5} + \frac{2}{5} \cdot \frac{15}{8}\right) - \frac{9}{2} : \frac{3}{4} =$ (Soluc: -11/2)
23. $\frac{17}{9} - \frac{15}{5} + \frac{4}{3} : \left(\frac{1}{5} + \frac{2}{3} - \frac{1}{15}\right) + \frac{14}{3} : \frac{16}{8} =$ (Soluc: 26/9)
24. $\frac{1}{3} + \frac{4}{3} : \frac{5}{6} \cdot \left(\frac{1}{2} - \frac{3}{2} \cdot \frac{10}{9} + 4\right) =$

$$25. \frac{21}{2} - \frac{19}{2} : \left(\frac{1}{5} + \frac{2}{5} \cdot \frac{15}{8} \right) =$$

(Soluc: 1/2)

$$26. \frac{\left(\frac{3}{4}+2\right)\left(\frac{3}{4}-2\right)}{5} - \frac{\left(\frac{3}{2}-1\right)^2}{4} =$$

(Soluc: -3/4)

Cuestión 3:

Resolver las siguientes operaciones con fracciones en línea, **simplificando en todo momento** los pasos intermedios y el resultado:

$$1. \frac{2}{3} + \left[1 - \left(\frac{3}{4} - \frac{1}{6} \right) \right] =$$

(Soluc: 13/12)

$$2. \frac{4}{5} - \frac{7}{3} \cdot \frac{3}{7} + \frac{1}{5} \left(2 + \frac{1}{2} \right) - \frac{7}{3} + 4 : \frac{6}{5} =$$

(Soluc: 13/10)

$$3. \frac{2}{3} + \frac{5}{4} \left(\frac{3}{5} + \frac{4}{10} \right) - \frac{5}{4} + \left(\frac{3}{5} : 4 \right) + \frac{12}{5} =$$

(Soluc: 193/60)

$$4. 2 + \frac{1}{5} : \left(2 + \frac{7}{3} - \frac{2}{4} + \frac{5}{3} \right) =$$

(Soluc: 112/55)

$$5. \left(\frac{2}{7} - \frac{4}{5} + \frac{2}{8} \right) \cdot \frac{3}{2} - \frac{7}{5} : \frac{4}{7} =$$

(Soluc: -797/280)

$$6. \frac{17}{9} - \frac{15}{5} + \frac{4}{3} : \left(\frac{1}{5} + \frac{2}{3} \cdot \frac{1}{15} \right) + \frac{14}{3} : \frac{16}{8} =$$

(Soluc: 26/9)

$$7. \frac{21}{5} + \frac{15}{4} \cdot \frac{16}{3} - \frac{15}{30} + \frac{12}{4} : \frac{5}{4} + 3 =$$

(Soluc: 291/10)

Cuestión 4:

Operar las siguientes fracciones de términos racionales, **simplificando en todo momento** los pasos intermedios y el resultado:

$$1. \frac{\frac{3}{5} + \frac{1}{2}}{\frac{2}{3} - \frac{1}{2}} = \quad (\text{Soluc: } 33/5)$$

$$2. \frac{\frac{2}{5} - \frac{1}{2} + \frac{1}{3}}{\frac{2}{3} \cdot \frac{6}{5}} = \quad (\text{Soluc: } 7/24)$$

$$3. \frac{\frac{1}{2} + \frac{3}{2} \cdot \frac{1}{6}}{\left(\frac{1}{2} + \frac{3}{2}\right) : \frac{1}{6}} = \quad (\text{Soluc: } 1/16)$$

$$4. \frac{\frac{1}{2} + \frac{3}{5} : \frac{2}{3} - 4}{\left(3 + \frac{2}{5}\right) \cdot \frac{1}{3}} = \quad (\text{Soluc: } -39/17)$$

$$5. \frac{\left(2 + \frac{1}{3}\right) \cdot \left(4 - \frac{2}{3}\right)}{1 + \frac{5}{4} : \frac{3}{12}} = \quad (\text{Soluc: } 35/27)$$

$$6. \frac{1 + \frac{1}{2}}{1 - \frac{1}{3}} = \quad (\text{Soluc: } 9/4)$$

$$7. \frac{1 - \frac{1}{2} + \frac{1}{3} \cdot \frac{1}{5} - 3}{\left(1 - \frac{1}{2}\right) \cdot \left(\frac{1}{3} + \frac{1}{5}\right) + 3} = \quad (\text{Soluc: } -73/98)$$

$$8. \frac{\left(\frac{2}{5} : 3 + \frac{1}{2}\right) \cdot \frac{1}{3} - \frac{2}{7}}{\frac{2}{5} \cdot 3 - \left(\frac{1}{2} + \frac{1}{3}\right) \cdot \frac{2}{7}} =$$

(Soluc: -47/606)

Cuestión 5:

Operar las siguientes fracciones de términos racionales, **simplificando en todo momento** los pasos intermedios y el resultado:

$$1. \frac{\frac{1}{3} : \left(2 + \frac{2}{5} \cdot \frac{25}{8} \right)}{\left(-\frac{2}{5} + \frac{1}{3} : 2 \right) \cdot \frac{25}{8}} =$$

(Soluc: -64/455)

$$2. \frac{\frac{1}{5} + \frac{3}{5} \cdot \frac{25}{6} - 2 : \frac{4}{9}}{\frac{4}{9} \left(\frac{1}{5} - 2 \right) - \frac{1}{3}} =$$

(Soluc: 27/17)

$$3. \frac{2 - \frac{5}{3} : \left(1 + \frac{1}{5} \right) - 2}{2 : \frac{5}{3} + 1 - \frac{1}{5} : 2} =$$

(Soluc: -125/189)

$$4. \frac{\frac{3}{5} : \frac{1}{2} + \frac{2}{5} - \frac{1}{5} : \left(\frac{3}{5} \cdot \frac{10}{9} \right)}{\frac{3}{5} + \frac{1}{5} : \frac{2}{5} - \frac{1}{5} \left(\frac{3}{5} + \frac{10}{9} \right)} =$$

(Soluc: 585/347)

$$5. 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{2}}} =$$

(Soluc: 8/5)

$$6. \frac{\left[\left(\frac{1}{7}-\frac{1}{2}\right)\frac{2}{3}+\frac{1}{3}\right]\frac{2}{5}-3}{\frac{1}{7}-\frac{1}{2}\frac{2}{3}:\frac{1}{3}\frac{2}{5}-3} =$$

(Soluc: 311/342)

$$7. 3 + \frac{2}{3 + \frac{2}{3 + \frac{2}{3}}} =$$

(Soluc: 139/39)

$$8. \frac{\frac{1}{2}\frac{8}{3}+\frac{3}{5}:\frac{9}{25}-1}{\frac{1}{2}\left(\frac{8}{3}+\frac{3}{5}\right):\frac{9}{25}+1} =$$

(Soluc: 1/2)

$$9. \frac{\frac{3}{5}:3-2\frac{3}{8}+\frac{2}{3}}{\frac{2}{3}+\frac{1}{3}\left(\frac{2}{4}+\frac{1}{6}\right)-3} =$$

(Soluc: -21/380)

$$10. \frac{\left[\left(\frac{1}{2}+\frac{3}{2}\frac{8}{27}\right)\frac{2}{5}-3\right]:\frac{3}{2}}{\left(\frac{1}{2}+\frac{3}{2}\right)\frac{8}{27}\left(\frac{2}{5}-3:\frac{3}{2}\right)} =$$

(Soluc: 59/32)

$$11. 1 + \frac{2}{3 + \frac{4}{5 + \frac{6}{7}}} =$$

(Soluc: 233/151)

$$12. \frac{\frac{3}{2}+\frac{1}{2}\left(\frac{2}{3}-\frac{3}{5}-3\right)+\frac{29}{6}:5}{1+\frac{2}{3+\frac{4}{5}}:\left(2-\frac{28}{19}\right)} =$$

(Soluc: 1/2)